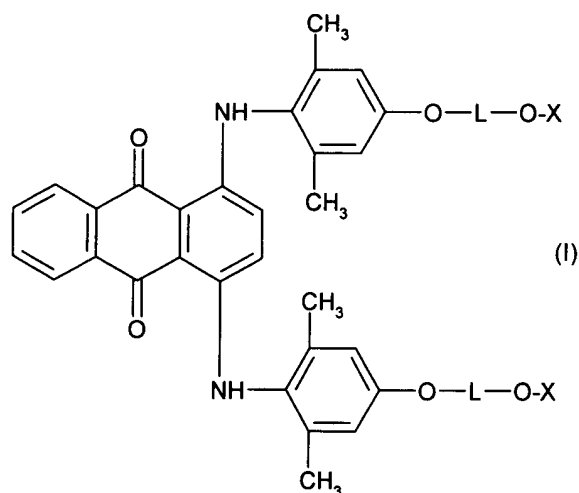


We claim:

1. A copolymerizable, thermally stable, blue anthraquinone colorant compound having the formula:



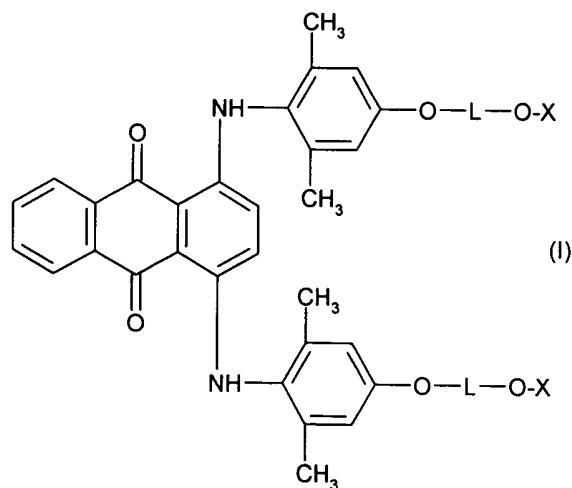
wherein L is a linking group selected from C<sub>2</sub>-C<sub>8</sub>-alkylene,  $-(\text{CH}_2\text{CH}_2\text{O})_n\text{CH}_2\text{CH}_2-$  and  $-\text{CH}_2\text{-cyclohexylene-4-CH}_2-$ , wherein n is 1 or 2; and X is hydrogen or the residue of an acylating agent.

2. An anthraquinone colorant compound according to Claim 1 wherein X is hydrogen or the residue of an acylating agent having the formula  $-\text{OCOC}_1\text{-C}_6\text{-alkyl}$ ,  $-\text{OCO}_2\text{C}_1\text{-C}_6\text{-alkyl}$ ,  $-\text{COC}_1\text{-C}_6\text{-aryl}$  and  $-\text{CONHC}_1\text{-C}_6\text{-alkyl}$  and  $-\text{CONH-aryl}$ .
3. An anthraquinone colorant compound according to Claim 1 wherein X is hydrogen.
4. An anthraquinone colorant compound according to Claim 1 wherein L is  $-\text{CH}_2\text{CH}_2-$  or  $-\text{CH}_2\text{CH}(\text{CH}_3)-$  and X is hydrogen.

5. A molding or extrusion grade polyester composition comprising a polyester having an inherent viscosity of at least 0.4 having reacted therewith or copolymerized therein at least one of the anthraquinone colorant compounds defined in Claim 1.

6. A molding or extrusion grade polyester composition according to Claim 5 having an inherent viscosity of about 0.4 to 1.2 comprising:

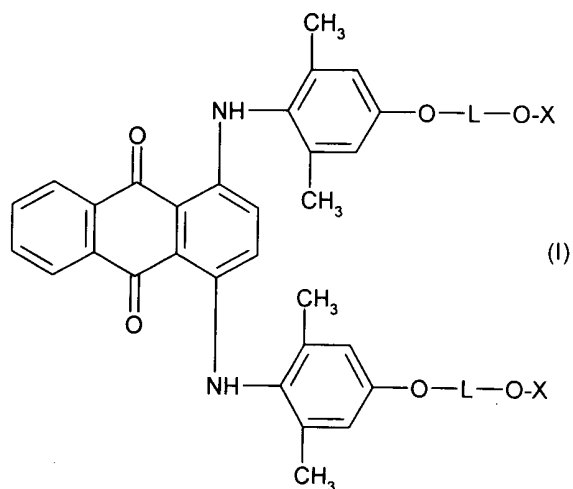
- (i) diacid residues comprising at least 75 mole percent terephthalic acid residues;
- (ii) diol residues comprising at least 75 mole percent ethylene glycol residues, wherein the total diacid residues and total diol residues each equals 100 mole percent; and
- (iii) colorant residues of at least one of the anthraquinone compounds having the formula:



wherein L is a linking group selected from  $C_2$ - $C_8$ -alkylene,  $-(CH_2CH_2O)_n-CH_2CH_2-$  and  $-CH_2-$ cyclohexylene-4- $CH_2-$ , wherein n is 1 or 2; and X is hydrogen or the residue of an acylating agent.

7. A molding or extrusion grade polyester composition according to Claim 6 wherein L is  $-\text{CH}_2\text{CH}_2-$  or  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ , X is hydrogen, the concentration of the colorant residues is about 100 to 500 ppmw, and the polyester is selected from unmodified poly(ethylene terephthalate) and poly(ethylene terephthalate) modified with up to about 5 mole percent of diacid residues and/or diol residues other than terephthalic acid and/or ethylene glycol residues.
8. A molding or extrusion grade polyester composition according to Claim 6 wherein L is  $-\text{CH}_2\text{CH}_2-$  or  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ , X is hydrogen, the concentration of the colorant residues is about 0.05 to 2 weight percent, and the polyester is selected from unmodified poly(ethylene terephthalate) and poly(ethylene terephthalate) modified with up to about 5 mole percent of diacid residues and/or diol residues other than terephthalic acid and/or ethylene glycol residues.
9. An X-ray film element comprising a film base comprised of a polyester having reacted therewith or copolymerized therein at least one of the compounds of formula (I).
10. The X-ray film element of Claim 9 wherein the polyester has an inherent viscosity of about 0.4 to 1.2 and comprises:
  - (i) diacid residues comprising at least 75 mole percent terephthalic acid residues;
  - (ii) diol residues comprising at least 75 mole percent ethylene glycol residues, wherein the total diacid residues and total diol residues each equals 100 mole percent; and

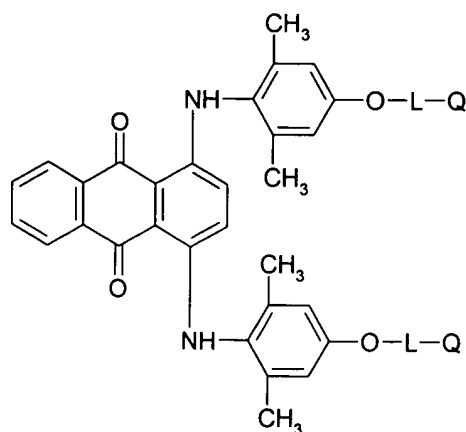
- (iii) 100 to 500 ppmw colorant residues of at least one of the anthraquinone compounds having the formula:



wherein L is a linking group selected from C<sub>2</sub>-C<sub>8</sub>-alkylene,  $-(\text{CH}_2\text{CH}_2\text{O})_n\text{CH}_2\text{CH}_2-$  and  $-\text{CH}_2\text{-cyclohexylene-4-CH}_2-$ , wherein n is 1 or 2; and X is hydrogen or the residue of an acylating agent.

11. The X-ray film element of Claim 10 wherein wherein L is  $-\text{CH}_2\text{CH}_2-$  or  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ , X is hydrogen, the concentration of the colorant residues is about 150 to 300 ppmw, and the polyester is selected from unmodified poly(ethylene terephthalate) and poly(ethylene terephthalate) modified with up to about 5 mole percent of diacid residues and/or diol residues other than terephthalic acid and/or ethylene glycol residues.

12. An anthraquinone colorant compound having the formula:

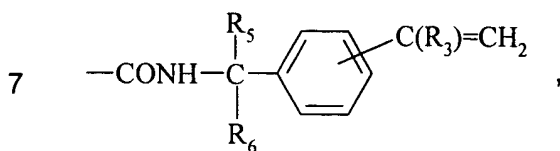
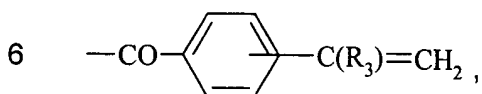


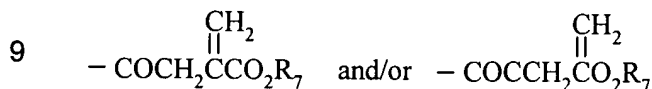
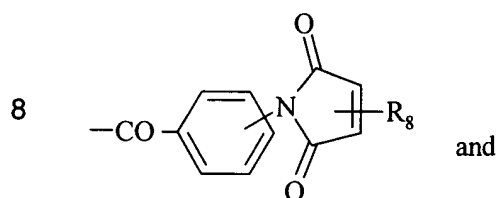
wherein L is a linking group selected from  $C_2$ - $C_8$ -alkylene,  $-(CH_2CH_2O)_n-CH_2CH_2-$  and  $-CH_2$ -cyclohexylene-4- $CH_2-$ , wherein n is 1 or 2; and Q is a photopolymerizable group selected from the radicals having the formulae

- 1  $-COC(R_3)=CH-R_4$ ,
- 2  $-CONHCOC(R_3)=CH-R_4$ ,
- 3  $-CONH-C_1-C_6$ -alkylene  $OCOC(R_3)=CH-R_4$ ,



- 5  $-COCH=CH-CO_2R_7$ ,





wherein

$\text{R}_3$  is selected from hydrogen or  $\text{C}_1\text{-C}_6\text{-alkyl}$ ;

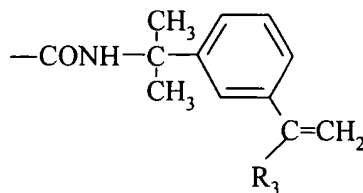
$\text{R}_4$  is selected from hydrogen;  $\text{C}_1\text{-C}_6\text{-alkyl}$ ; phenyl; phenyl substituted with one or more groups selected from  $\text{C}_1\text{-C}_6\text{-alkyl}$ ,  $\text{C}_1\text{-C}_6\text{-alkoxy}$ ,  $-\text{N}(\text{C}_1\text{-C}_6\text{-alkyl})_2$ , nitro, cyano,  $\text{C}_2\text{-C}_6\text{-alkoxycarbonyl}$ ,  $\text{C}_2\text{-C}_6\text{-alkanoyloxy}$  and halogen; 1- and 2-naphthyl; 1- and 2-naphthyl substituted with  $\text{C}_1\text{-C}_6\text{-alkyl}$  or  $\text{C}_1\text{-C}_6\text{-alkoxy}$ ; 2- and 3-thienyl; 2- and 3-thienyl substituted with  $\text{C}_1\text{-C}_6\text{-alkyl}$  or halogen; 2- and 3-furyl; and 2- and 3-furyl substituted with  $\text{C}_1\text{-C}_6\text{-alkyl}$ ;

$\text{R}_5$  and  $\text{R}_6$  are independently selected from hydrogen,  $\text{C}_1\text{-C}_6\text{-alkyl}$ , aryl, or  $\text{R}_5$  and  $\text{R}_6$  may be combined to represent a  $-(\text{CH}_2)_{3-5}-$  radical;

$\text{R}_7$  is selected from hydrogen or a group selected from  $\text{C}_1\text{-C}_6\text{-alkyl}$ ,  $\text{C}_3\text{-C}_8\text{-alkenyl}$ ,  $\text{C}_3\text{-C}_8\text{-cycloalkyl}$  and aryl; and

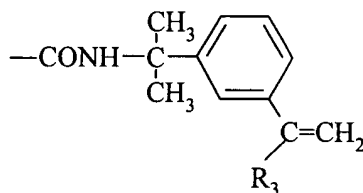
$\text{R}_8$  is selected from hydrogen,  $\text{C}_1\text{-C}_6\text{-alkyl}$  and aryl.

13. An anthraquinone colorant compound according to Claim 12 wherein Q is a group having the formula  $-\text{COC}(\text{R}_3)=\text{CH}_2$  or



wherein R<sub>3</sub> is hydrogen or methyl.

14. An anthraquinone colorant compound according to Claim 12 wherein L is  $\text{---CH}_2\text{CH}_2\text{---}$  or  $\text{---CH}_2\text{CH(CH}_3\text{)---}$  and Q is a group having the formula  $\text{---COC(R}_3\text{)=CH}_2$  or



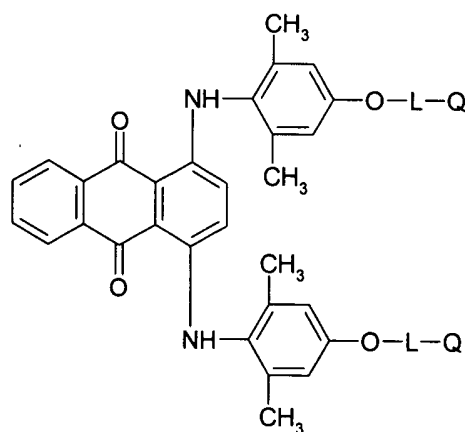
wherein R<sub>3</sub> is hydrogen or methyl.

15. A coating composition comprising (i) one or more polymerizable vinyl compounds, (ii) one or more of the colorant compounds according to Claim 12, and (iii) at least one photoinitiator.

16. A coating composition according to Claim 15 comprising (i) one or more polymerizable vinyl compounds, (ii) one or more of the colorant compounds of Claim 12 present in a concentration of about 0.05 to 15 weight percent based on the weight of component (i), and (iii) a photoinitiator present in a concentration of about 1 to 15 weight percent based on the weight of the polymerizable vinyl compound(s) present in the coating composition.

17. A coating composition according to Claim 16 wherein the polymerizable vinyl compounds comprise a solution of a polymeric, polymerizable vinyl compound selected from acrylated and methacrylated polyesters, acrylated and methacrylated polyethers, acrylated and methacrylated epoxy polymers, acrylated or methacrylated urethanes, and mixtures thereof, in a diluent selected from monomeric acrylate and methacrylate esters.

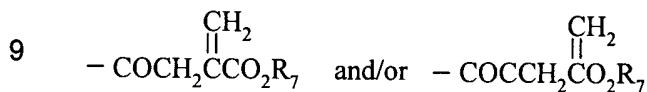
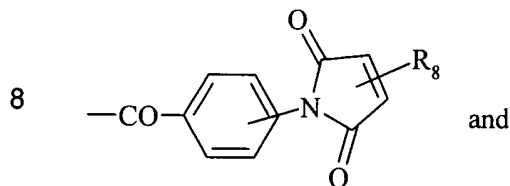
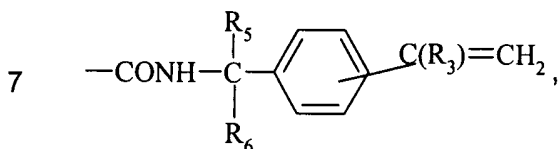
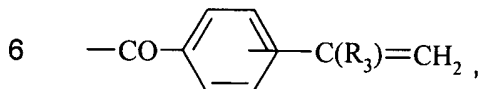
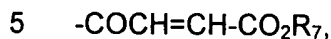
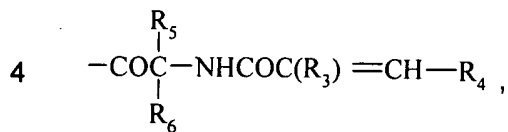
18. A polymeric coating composition according to Claim 15 comprising a polymer of one or more acrylic acid esters, one or more methacrylic acid esters and/or other copolymerizable vinyl compounds, having copolymerized therein one or more of the colorant compounds having the formula:



wherein L is  $-\text{CH}_2\text{CH}_2-$  or  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ ; and Q is a photopolymerizable group selected from the radicals having the formulae

- 1  $-\text{COC}(\text{R}_3)=\text{CH}-\text{R}_4$ ,
- 2  $-\text{CONHCOC}(\text{R}_3)=\text{CH}-\text{R}_4$ ,
- 3  $-\text{CONH}-\text{C}_1-\text{C}_6\text{-alkylene OCOC}(\text{R}_3)=\text{CH}-\text{R}_4$ ,





wherein

$R_3$  is selected from hydrogen or  $C_1$ - $C_6$ -alkyl;

$R_4$  is selected from hydrogen;  $C_1$ - $C_6$ -alkyl; phenyl; phenyl substituted with one or more groups selected from  $C_1$ - $C_6$ -alkyl,  $C_1$ - $C_6$ -alkoxy,  $-N(C_1-C_6\text{-alkyl})_2$ , nitro, cyano,  $C_2$ - $C_6$ -alkoxycarbonyl,  $C_2$ - $C_6$ -alkanoyloxy and halogen; 1- and 2-naphthyl; 1- and 2-naphthyl substituted with  $C_1$ - $C_6$ -alkyl or  $C_1$ - $C_6$ -alkoxy; 2- and 3-thienyl; 2- and 3-thienyl substituted with  $C_1$ - $C_6$ -alkyl or halogen; 2- and 3-furyl; and 2- and 3-furyl substituted with  $C_1$ - $C_6$ -alkyl;

$R_5$  and  $R_6$  are independently selected from hydrogen,  $C_1$ - $C_6$ -alkyl, aryl, or  $R_5$  and  $R_6$  may be combined to represent a  $-(CH_2-)_{3-5}$ - radical;

$R_7$  is selected from hydrogen or a group selected from  $C_1$ - $C_6$ -alkyl,  $C_3$ - $C_8$ -alkenyl,  $C_3$ - $C_8$ -cycloalkyl and aryl; and

R<sub>8</sub> is selected from hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl and aryl.

19. A polymeric composition according to Claim 18 comprising a coating of an acrylic polymer of one or more acrylic acid esters, one or more methacrylic acid esters or a mixture thereof having copolymerized therein one or more of the colorant compounds defined in Claim 18.

20. A polymeric composition according to Claim 18 comprising a coating of an unsaturated polyester containing one or more maleate/fumarate residues; one or more monomers which contain one or more vinyl ether groups, one or more vinyl ester groups, or a combination thereof, and, optionally, one or more acrylic or methacrylic acid esters; or a mixture thereof having copolymerized therein one or more of the colorant compounds defined in Claim 18.

21. A polymeric coating according to Claim 19 containing from about 0.05 to 15.0 weight percent of the residue of one or more of the colorant compounds of Claim 18 based on the weight of the coating.

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